

# SEQUENCE LISTING

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<120> PLANT NUCLEOTIDE SUGAR PYROPHOSPHATASE/PHOSPHODIESTERASE  
 (NPPASE), METHOD OF PRODUCTION, USE IN THE MANUFACTURE OF TESTING  
 DEVICES AND IN THE PRODUCTION OF TRANSGENIC PLANTS

<130> U015575-8

<140> 10/520696  
 <141> 2005-01-06

<150> PCT/ES03/000363  
 <151> 2003-07-15

<160> 24

<170> PatentIn version 3.3

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 <212> PRT  
 <213> HORDEUM VULGARE CV. SCARLETT

<220>  
 <221> misc\_feature  
 <223> N-terminal end of soluble NPPase

<400> 1

Ala	Ala	Val	Arg	Ala	Ser	Pro	Asp	Leu	Leu	Gly	Ser	Arg	Gly	Glu
1				5				10						15

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 <223> Tryptic sequence of soluble NPPase

<220>  
 <221> MISC\_FEATURE  
 <222> (6)..(6)  
 <223> Lys (variation)

<220>  
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 <222> (9)..(9)  
 <223> Ile (variation)

<220>  
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 <222> (10)..(10)

<223> Lys (variation)

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Ala Ser Tyr Pro Gly Gln Thr Ser Leu Gln Arg  
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<210> 3

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<223> Tryptic sequence of soluble NPPase

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<223> Met (variation)

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His Ala Pro Ala Asp Thr Val Thr Phe Gly Arg  
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<210> 4

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<223> Tryptic sequence of soluble NPPase

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Ala Pro Pro Tyr Pro  
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<210> 5

<211> 8

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<223> Tryptic sequence of soluble NPPase

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Ala Trp Val Thr Val Glu Phe Lys  
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<210> 6

<211> 8

<212> PRT

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<223> Tryptic sequence of soluble NPPase

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<222> (1)..(1)

<223> Lys (variation)

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<222> (3)..(3)

<223> Ile (variation)

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<222> (6)..(6)

<223> Ile (variation)

<400> 6

Gln Ser Leu Glu Gly Leu Trp Arg  
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<210> 7

<211> 15

<212> PRT

<213> ORYZA SATIVA

<220>

<221> misc\_feature

<223> N-terminal end of soluble NPPase

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Gly Ser Ala Phe Val Ser Ala Thr Pro Ala Leu Leu Gly Asp Gln  
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<210> 8

<211> 23

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<221> misc\_feature

<223> Tryptic sequence (MS/MS) of soluble NPPase

<400> 8

Phe Gln Leu Leu Asn Gln Arg Tyr Asp Phe Ser Phe Ala Leu Glu Thr  
1 5 10 15

Gly Gly Leu Glu Asn Pro Lys  
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<223> Tryptic sequence (MS/MS) of soluble NPPase

<400> 9

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1 5 10

<210> 10  
<211> 10  
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<213> ORYZA SATIVA

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<223> Tryptic sequence (Edman) of soluble NPPase

<400> 10

Leu Ala Gln Gly Lys Ser Tyr Asp Glu Met  
1 5 10

<210> 11  
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<220>  
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<223> Tryptic sequence (MS/MS) of soluble NPPase

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1 5 10

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<210> 13  
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<220>  
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<223> Tryptic sequence (MS/MS) of soluble NPPase

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Ala Pro Asp Phe Pro Gly Gln Asn Ser Leu Gln Arg  
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<213> ORYZA SATIVA

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<221> misc\_feature  
<223> Tryptic sequence (MS/MS) of soluble NPPase

<400> 14

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<210> 15  
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<220>  
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<223> Tryptic sequence (MS/MS) of soluble NPPase

<400> 15

Asp Trp Pro Asn Thr Gly Gly Phe Phe Asp Val Lys  
1 5 10

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<220>  
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<223> Tryptic sequence (MS/MS) of soluble NPPase

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Phe Ile Glu Gln Cys Leu Ser Thr Val Asp Arg  
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<210> 17  
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<220>  
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 <223> Tryptic sequence (MS/MS) of soluble NPPase

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Val Tyr Asp Ser Phe Tyr Val Glu Arg  
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<210> 18  
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<220>  
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 <223> Primer of the 5' region of NPPase

<400> 18

ggcgttgctc ggcgacca

18

<210> 19  
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 <212> DNA  
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<220>  
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 <223> Primer of the 3' region of NPPase

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19

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<220>  
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 <223> Amino acid sequence of rice NPPase

<400> 21

Met Val Ser Arg Lys Arg Gly Gly Gly Gly Val Ala Met Ala Val  
 1 5 10 15

Ala Met Leu Leu Ala Ala Ala Ser Ala Ser Arg Pro Ser Ser Ser Leu  
 20 25 30

Glu Gly Phe Gln Pro Leu Ser Lys Ile Ala Val His Lys Ala Thr Val  
 35 40 45

Asp Leu His Gly Ser Ala Phe Val Ser Ala Thr Pro Ala Leu Leu Gly  
 50 55 60

Asp Gln Gly Glu Asp Thr Glu Trp Val Thr Val Lys Tyr Gly Trp Ala  
 65 70 75 80

Asn Pro Ser Ala Asp Asp Trp Ile Ala Val Phe Ser Pro Ala Asp Phe  
 85 90 95

Ile Ser Gly Ser Cys Pro Asn Pro Ser Arg Tyr Pro Asp Glu Pro Leu  
 100 105 110

Leu Cys Thr Ala Pro Ile Lys Tyr Gln Phe Ala Asn Tyr Ser Ala Asn  
 115 120 125

Tyr Val Tyr Trp Gly Lys Gly Ser Ile Arg Phe Gln Leu Ile Asn Gln  
 130 135 140

Arg Tyr Asp Phe Ser Phe Ala Leu Phe Thr Gly Gly Leu Glu Asn Pro  
 145 150 155 160

Lys Leu Val Ala Val Ser Glu Ala Ile Ser Phe Lys Asn Pro Lys Ala  
 165 170 175

Pro Val Tyr Pro Arg Leu Ala Gln Gly Lys Ser Tyr Asp Glu Met Thr  
 180 185 190

Val Thr Trp Thr Ser Gly Tyr Asp Ile Ser Glu Ala Tyr Pro Phe Val  
 195 200 205



Glu Trp Gly Met Val Val Ala Gly Ala Ala Ala Pro Thr Arg Thr Ala  
210 215 220

Ala Gly Thr Leu Thr Phe Asn Arg Gly Ser Met Cys Gly Asp Pro Asp  
225 230 235 240

Arg Thr Val Gly Trp Arg Asp Pro Gly Phe Ile His Thr Ala Phe Leu  
245 250 255

Arg Asp Leu Trp Pro Asn Lys Glu Tyr Tyr Tyr Lys Ile Gly His Glu  
260 265 270

Leu Ser Asp Gly Ser Ile Val Trp Gly Lys Gln Tyr Thr Phe Arg Ala  
275 280 285

Pro Pro Phe Pro Gly Gln Asn Ser Leu Gln Arg Ile Ile Val Phe Gly  
290 295 300

Asp Met Gly Lys Ala Glu Arg Asp Gly Ser Asn Glu Phe Ala Asn Tyr  
305 310 315 320

Gln Pro Gly Ser Leu Asn Thr Thr Asp Arg Leu Val Glu Asp Leu Asp  
325 330 335

Asn Tyr Asp Ile Val Phe His Ile Gly Asp Leu Pro Tyr Ala Asn Gly  
340 345 350

Tyr Ile Ser Gln Trp Asp Gln Phe Thr Ala Gln Val Ala Pro Ile Thr  
355 360 365

Ala Lys Lys Pro Tyr Met Ile Ala Ser Gly Asn His Glu Arg Asp Trp  
370 375 380

Pro Asn Thr Gly Gly Phe Phe Asp Val Lys Asp Ser Gly Gly Glu Cys  
385 390 395 400

Gly Val Pro Ala Glu Thr Met Tyr Tyr Tyr Pro Ala Glu Asn Arg Ala  
405 410 415

Asn Phe Trp Tyr Lys Val Asp Tyr Gly Met Phe Arg Phe Cys Ile Ala  
420 425 430

Asp Ser Glu His Asp Trp Arg Glu Gly Thr Asp Gln Tyr Lys Phe Ile  
435 440 445

Glu Gln Cys Leu Ser Thr Val Asp Arg Lys His Gln Pro Trp Leu Ile  
450 455 460

Phe Ala Ala His Arg Val Leu Gly Tyr Ser Ser Asn Trp Trp Tyr Ala  
465 470 475 480

Asp Gln Gln Ser Phe Glu Glu Pro Glu Gly Arg Glu Ser Leu Gln Arg  
485 490 495

Leu Trp Gln Arg His Arg Val Asp Val Ala Phe Phe Gly His Val His  
500 505 510

Asn Tyr Glu Arg Thr Cys Pro Met Tyr Gln Ser Gln Cys Val Ser Gly  
515 520 525

Glu Arg Arg Arg Tyr Ser Gly Thr Met Asn Gly Thr Ile Phe Val Val  
530 535 540

Ala Gly Gly Gly Gly Ser His Leu Ser Asp Tyr Thr Ser Ala Ile Pro  
545 550 555 560

Lys Trp Ser Val Phe Arg Asp Arg Asp Phe Gly Phe Val Lys Leu Thr  
565 570 575

Ala Phe Asn His Ser Ser Leu Leu Phe Glu Tyr Lys Lys Ser Ser Asp  
580 585 590

Gly Lys Val Tyr Asp Ser Phe Thr Val Glu Arg Asp Tyr Arg Asp Val  
595 600 605

Leu Ser Cys Val His Asp Ser Cys Leu Pro Thr Thr Leu Ala Ser  
610 615 620

<210> 22  
<211> 1268  
<212> DNA  
<213> HORDEUM VULGARE CV. SCARLETT

<220>  
<221> misc\_feature  
<223> Incomplete cDNA of barley NPPase

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cctctcccag tgggaccagt tcaccgcaca ggtcgcccc atcagcgcca agaaacccta 300  
catggttgca agcggcaacc acgagagggg ctggcccaac accggcgggt tcttcgacgt 360  
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caaggactcc ggcggcgaat gcggcgtgcc ggccgagacc atgtactact accccgccga 420  
 aaacagggca aacttctggt acaaggtgga ctacgggatg ttccggttct gcgtggggga 480  
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<210> 23  
 <211> 350  
 <212> PRT  
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<220>  
 <221> misc\_feature  
 <223> Amino acid sequence deduced from the cDNA of barley NPPase  
 <400> 23

Ser Asp Gly Ser Val Val Trp Ala Lys Pro Tyr Thr Phe Arg Ala Pro  
 1 5 10 15

Pro Thr Pro Gly Gln Asn Ser Leu Gln Arg Ile Ile Val Phe Gly Asp  
 20 25 30

Met Gly Lys Ala Glu Arg Asp Gly Ser Asn Glu Phe Ala Asn Tyr Gln  
 35 40 45

Pro Gly Ser Leu Asn Thr Thr Asp Arg Leu Ile Glu Asp Leu Asp Asn  
 50 55 60

Tyr Asp Ile Val Phe His Ile Gly Asp Met Pro Tyr Ala Asn Gly Tyr  
 65 70 75 80

Leu Ser Gln Trp Asp<sub>85</sub> Gln Phe Thr Ala Gln<sub>90</sub> Val Ala Pro Ile Ser<sub>95</sub> Ala

Lys Lys Pro Tyr<sub>100</sub> Met Val Ala Ser Gly<sub>105</sub> Asn His Glu Arg Asp<sub>110</sub> Trp Pro

Asn Thr Gly<sub>115</sub> Gly Phe Phe Asp Val<sub>120</sub> Lys Asp Ser Gly<sub>125</sub> Glu Cys Gly

Val Pro Ala Glu Thr Met Tyr<sub>135</sub> Tyr Tyr Pro Ala Glu<sub>140</sub> Asn Arg Ala Asn

Phe Trp Tyr Lys Val Asp<sub>150</sub> Tyr Gly Met Phe Arg<sub>155</sub> Phe Cys Val Gly Asp<sub>160</sub>

Ser Glu His Asp Trp<sub>165</sub> Arg Glu Gly Thr Pro<sub>170</sub> Gln Tyr Lys Phe Ile<sub>175</sub> Glu

Glu Cys Leu Ser<sub>180</sub> Thr Val Asp Arg Lys<sub>185</sub> His Gln Pro Trp Leu<sub>190</sub> Ile Phe

Thr Ala His Arg Val Leu Gly Tyr<sub>200</sub> Ser Ser Asn Ser Trp<sub>205</sub> Tyr Ala Asp

Gln Gly Ser Phe Glu Glu Pro<sub>215</sub> Glu Gly Arg Glu Ser<sub>220</sub> Leu Gln Lys Leu

Trp<sub>225</sub> Gln Arg Tyr Arg Val<sub>230</sub> Asp Ile Ala Ser Phe<sub>235</sub> Gly His Val His<sub>240</sub> Asn

Tyr Glu Arg Thr Cys<sub>245</sub> Pro Leu Tyr Gln Ser<sub>250</sub> Gln Cys Val Asn Ala<sub>255</sub> Asp

Lys Thr His Tyr<sub>260</sub> Ser Gly Thr Met Asn<sub>265</sub> Gly Thr Ile Phe Val<sub>270</sub> Val Ala

Gly Gly Gly<sub>275</sub> Gly Ser His Leu Ser<sub>280</sub> Ser Tyr Thr Thr Ala<sub>285</sub> Ile Pro Lys

Trp Ser Ile Phe Arg Asp His<sub>295</sub> Asp Tyr Gly Phe Thr<sub>300</sub> Lys Leu Thr Ala

Phe Asn His Ser Ser Leu<sub>310</sub> Leu Phe Glu Tyr Met<sub>315</sub> Lys Ser Ser Asp Gly<sub>320</sub>

Lys Val Tyr Asp Ser<sub>325</sub> Phe Thr Ile His Arg<sub>330</sub> Asp Tyr Arg Asp Val<sub>335</sub> Leu

Ser Cys Val His Asp Ser Cys Phe Pro Thr Thr Leu Ala Ser  
340 345 350

<210> 24  
<211> 39  
<212> DNA  
<213> HORDEUM VULGARE CV. SCARLETT

<220>  
<221> misc\_feature  
<223> Primer of the 5' region of NPPase

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gcagcagtac gagcatcacc agatctacta gcatcacga

39